

Docket No. JIIL07  
Application No. 10/783,527

## REMARKS

### Status of the Application

Claims 1-4 were previously pending. Claims 1 and 3 were objected to for informalities. Claims 1, 3, and 4 were rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643). Claim 2 was rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643) as applied to claims 1, 3-4, and further in view of Hulse et al. (US 6,550,952). The specification was objected to for informalities.

Applicant has amended claims 1-4 and added new claims 5-10. Applicant has also amended the specification for clarity. No new matter adds through the amendments. For the reasons discussed below, withdrawal of the rejections is requested.

### Specification Objections

Applicant has amended the specification for clarity. A substitute specification is filed herewith. Withdrawal of the objection is requested.

### Claim Objections

Claims 1 and 3 were objected to for informalities.

Claims 1 and 3 have been amended to cure the informalities. Withdrawal of the objection is requested.

### Claim Rejections- 35 U.S.C. 103(a)

Claims 1, 3, and 4 were rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643).

Claim 1 as amended specifies that "the outer layer of said plastic optical fiber is formed with a plurality of depressions for producing a light leak effect, the depressions do not extend into the inner core layer of said plastic optical fiber". Reference '876 does not teach or suggest such features.

In fact, reference '876 specifically teaches that "[E]ach notch (4) extends through the fibre cladding (where present) into the core material". Col. 7, lines 25-27. While in the present invention as defined in claim 1, the depressions are formed only in the outer layer and do not

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extend into the inner core layer. Therefore, reference '876 teaches against the present invention.

Clearly, reference '643 cannot cure the deficiencies of reference '876.

For at least the reasons discussed above, claim 1 is patentable over the cited references.

Claims 3 and 4 depend from claim 1 and, for at least the same reasons, are also patentable over the cited references.

Claim 2 was rejected under 35 USC 103(a) as being unpatentable over Appeldorn et al. (US 5,432,876) in view of Appeldorn et al. (US 5,659,643) as applied to claims 1, 3-4, and further in view of Hulse et al. (US 6,550,952).

Hulse was cited to teach two illuminating devices being coupled with a connector. However, Hulse cannot cure the above discussed deficiencies of reference '876. Therefore, claim 1 as well as its dependent claim 2 are patentable over Appeldorn (US 5,432,876), Appeldorn (US 5,659,643), and Hulse.

#### **New Claims**

New claims 5-10 have been added to more fully protect the present invention. These claims depend from claim 1 and, thus, are patentable. In addition, these dependent claims contain features that further distinguish over the cited references.

For example, claim 5 specifies that "the depressions on the plastic optical bundle are randomly orientated". While reference '876 requires that "[T]he notches (4) on any particular layer must be on the side of the layer (41 and 42) that is remote from the front panel (34)".

Claims 6-10 specify specific shapes of the depressions. While reference '876 requires that notches (4) must have two surfaces 6 and 10 and the two surfaces must meet specific requirements. See col. 7, lines 25-35, col. 8, lines 20-37.

#### **Conclusion**

In view of the foregoing amendments and remarks, it is respectfully submitted that the remaining claims 1-10 are now in condition for allowance. Allowance of this application is earnestly solicited.

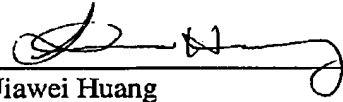
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Plastic Optical Fiber Bundle with Pitched Patterned Illumination  
Decorations Depressions

**Background of the Invention**

5 **1. Field of the Invention**

The present invention is related to plastic optical fiber bundle with spaced illumination ~~decorations~~ depressions, especially to a plastic optical fiber bundle with a ~~pitched~~ depression patterned depressions on its surface to produce illumination effect.

10 **2. Description of the Prior Art**

As shown in FIG. 1, ordinary connection lines have a string of bulbs with different colors in a transparent plastic pipes to produce illumination effect. The bulbs 1' of the bulb string structure 1' connect to each other and produce an offending flashing effect when the power is turned on. However, this bulb string structure brings overheat easily and, thus, may cause fire. The production cost of this bulb string structure is high.

**3. Summary of the Invention**

The objective of the present invention is to provide a "plastic optical fiber bundle with pitched patterned illumination ~~decorations~~ depressions" without the disadvantage of the ordinary connection lines. The outer layer of a plastic optical fiber is formed with depressions ~~destructured~~ based on an appropriate spacing unit before it is finally shaped during the fiber drawing process, so that a spaced or patterned light leak effect is produced at the positions where the surface of the plastic optical fiber is formed with depressions ~~destructured~~ in a spaced ~~manner~~ pattern based on an appropriate spacing unit.

25 The plastic optical fiber bundle with pitched patterned illumination depressions ~~decorations~~ of the present invention has a protection sleeve on its surface and an illumination structure on each end, so that it can be used as an illumination decoration for different applications.

30 The present invention is further described with the following figures:  
FIG. 1 is ~~an ordinary~~ a conventional connection line;

- FIG. 2-1 shows the 1st view of the plastic optical fiber bundle of the present invention ~~destructured in a pitched manner~~;
- FIG. 2-2 shows the 2nd view of the plastic optical fiber bundle of the present invention ~~destructured in a pitched manner~~;
- 5 FIG. 2-3 shows the 3rd view of the plastic optical fiber bundle of the present invention ~~destructured in a spaced manner~~;
- FIG. 2-4 shows the 4th view of the plastic optical fiber bundle of the present invention ~~destructured in a pitched manner~~;
- FIG. 3 shows the cross-sectional view of the plastic optical fiber bundle of the present
- 10 invention ~~destructured in a pitched manner~~;
- FIG. 4 shows the light leak schematic view of the plastic optical fiber bundle of the present invention ~~destructured in a pitched manner~~;
- FIG. 5-1 shows the cross-sectional view of the plastic optical fiber bundle in an embodiment of the present invention; and
- 15 FIG. ~~6~~ 5-2 shows the side view of the plastic optical fiber bundle in an embodiment of the present invention.

#### 4. Detailed Description of the Preferred Embodiments

- The present invention is directed to a plastic optical fiber bundle with ~~pitched~~ patterned
- 20 illumination ~~decorations~~ depressions. PMM A and PTFE B are fed simultaneously to form an outer layer and an inner ~~layers~~ layer, respectively. The materials are molten and extruded and then spun through a spinning nozzle to form a molten two-layer plastic optical fiber. The surface of the molten plastic optical fiber P is formed with depressions
- 25 ~~destructured in a pitched manner~~ pattern based on an appropriate spacing unit ~~formed by~~ means of a special mold before the molten plastic optical fiber is cooled on a cooling plate. During the ~~destruction~~ process of forming the depressions, only the outer layer is ~~destructured~~ formed with depressions without affecting the inner layer. The plastic optical fiber P with ~~pitched-destructions~~ patterned depressions is distributed with spaced dot-shaped depressions ~~dot-destructions~~ (a) on its surface (FIG. 2-1); The plastic optical
- 30 P with ~~spaced-destructions~~ patterned depressions is distributed with ~~pitched~~ patterned "+"-shaped depressions (b) and "-"-shaped depressions (c) ~~destructions~~ on its surface

- (FIG. 2-2); The plastic optical fiber P with ~~pitched-destructions~~ patterned depressions is distributed with ~~pitched~~ patterned square-shaped depressions (d) ~~destructions~~ on its surface (FIG. 2-3); The plastic optical fiber P with ~~pitched-destructions~~ patterned depressions is distributed with ~~pitched~~ patterned star-shaped depressions (e) ~~destructions~~ on its surface (FIG. 2-4). As shown in FIG. 3, a plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions (1) is formed by individual plastic optical fibers P1, ... Pn with ~~pitched~~ patterned illumination ~~decorations~~ P1-Pn depressions. A protection sleeve C is put onto the outer layer of the plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions 1.
- 10 The surface of the plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions 1 as shown in FIG. 4 is ~~destructured~~ formed and distributed with holes 01-01n, 02-02n and 03-03n. The plastic optical fiber P with ~~pitched-destructions~~ patterned depressions is distributed with ~~spaces~~ spaced regions P', P'', P''' on its surface.
- 15 When light radiates into the plastic optical fiber P with ~~pitched-destructions~~ patterned depressions, the light is refracted to the P', P'', P''' distribution areas to produce a light leak effect distributed in a ~~pitched~~ patterned manner. When the power is turned on and the luminary L illuminates, the plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions 1 produces a light leak and decoration effect that is
- 20 distributed in the ~~pitched-destruction~~ patterned depression areas D1, D1n, D2, D2n. A connector W is installed between the plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions 1 and the plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ 1' depressions 1'' for permanent connection.
- 25 The present invention is a plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions and the plastic optical fiber producing the light leak effect has the following characteristics:
- (1) The plastic optical fiber is ~~destructured~~ formed with depressions in a spaced manner based on an appropriate unit during the fiber drawing process;
- 30 (2) The plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions of the present invention does not bring overheat or cause fire; and

(3) The connection line with ~~pitched~~ patterned illumination ~~decorations~~ depressions of the present invention radiates soft light that does not offend ~~your~~ people's eyes.

**What is claimed is:**

1. A plastic optical fiber bundle with pitched illumination decorations having a single plastic optical fiber, the surface of said plastic optical fiber being destructed in a pitched  
5 manner with a special mold before said plastic optical fiber forwarded to the cooling area, wherein an outer layer of said plastic optical fiber is distributed with pitched destructions formed based on an appropriate unit and only the out layer of said plastic optical fiber is destructed without affecting any inner layer of said plastic optical fiber; a plural of separate plastic optical fibers with pitched destructions form said plastic optical fiber  
10 bundle with pitched illumination decorations; said plastic optical fiber bundle produces a light leak effect when a power is turned on and an luminary or a spotlight bulb radiates light; the light is very soft without offending to eyes and can be used for different applications.
- 15 2. A plastic optical fiber bundle as cited in claim 1, wherein a connector is installed between two plastic optical fiber bundles with pitched illumination decorations for permanent connection.
- 20 3. A plastic optical fiber bundle as cited in claim 1, wherein a illumination structure is installed on each end of said plastic optical fiber bundles with pitched illumination decorations.
- 25 4. A plastic optical fiber bundle as cited in claim 3, wherein a luminary or a spotlight bulb is installed in said illumination structure of said plastic optical fiber bundles with pitched illumination decorations.



### Abstract

The present invention is related to a plastic optical fiber bundle with ~~pitched~~ patterned illumination ~~decorations~~ depressions. A single plastic optical fiber is reeled off and spun through a spinning nozzle. The surface of the plastic optical fiber is then ~~destructured~~ formed with depressions in a ~~pitched~~ patterned manner based on an appropriate ~~pitched~~ spaced unit before the plastic optical fiber is cooled in a cooling area. When ~~destructuring~~ forming depressions on the plastic optical fiber, only the outer layer is ~~destructured~~ formed with the depressions without affecting the inner layer so as to produce an ~~pitched~~ depression and illumination effect on the surface of the plastic optical fiber. A plastic optical fiber bundle is formed by individual plastic optical fibers with spaced illumination ~~decorations~~ depressions. An illumination structure is installed on each end of the plastic optical fiber bundle ~~with pitched illumination decorations~~ and a luminary or a spotlight bulb is installed in each illumination structure of the plastic optical fiber bundle ~~with illumination decorations~~. When the power is turned on, the luminary or spotlight bulb radiates light through the plastic optical fiber bundle with illumination ~~decorations~~ depressions. The light is very soft without offending to eyes and can be used for different applications.